



Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
Springfield Water and Sewer Commission

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, disinfecting, filtering, or treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

Table 1: Public Water System Information

<i>PWS Name</i>	Springfield Water and Sewer Commission
<i>PWS Address</i>	P.O. Box 955
<i>City/Town</i>	Springfield
<i>PWS ID Number</i>	1281000
<i>Local Contact</i>	Mr. Douglas Borgatti
<i>Phone Number</i>	413-787-6256

Introduction

We are all concerned about the quality of the water we drink. Drinking water reservoirs may be threatened by many potential contaminant sources, including storm runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures.

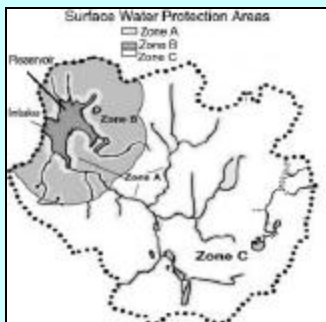
Refer to Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes the following sections:

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection
4. Appendices

What is a Watershed?

A watershed is the land area that catches and drains rainwater down-slope into a river, lake or reservoir. As water travels down from the watershed area it may carry contaminants from the watershed to the drinking water supply source. For protection purposes, watersheds are divided into protection Zones A, B and C.



Glossary Protection Zones

Zone A: is the most critical for protection efforts. It is the area 400 feet from the edge of the reservoir and 200 feet from the edge of the tributaries (rivers and/or streams) draining into it.

Zone B: is the area one-half mile from the edge of the reservoir but does not go beyond the outer edge of the watershed.

Zone C: is the remaining area in the watershed not designated as Zones A or B.

The attached map shows Zone A and your watershed boundary.

Section 1: Description of the Water System

System Susceptibility:

Moderate

<i>Source Name</i>	<i>Source ID</i>	<i>Susceptibility</i>
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Cobble Mountain Reservoir	1281000-02S	Moderate
Borden Brook Reservoir	1281000-04S	Moderate
Sedimentation Basin	1281000-05S	Moderate

Springfield, the largest municipality in western Massachusetts, is located in the Connecticut River Valley near the Connecticut border. Springfield Water and Sewer Commission (SWSC) provides water for the greater Springfield metropolitan area including Springfield, Agawam, Longmeadow, East Longmeadow and Ludlow; it also provides a back-up/supplemental supply for Southwick, Westfield and West Springfield. The SWSC utilizes the Cobble Mountain Reservoir system located in the Little River watershed partially located in the towns of Russell, Tolland, Blandford, Granville, Westfield and Otis. The system includes Cobble Mountain Reservoir (1281000-02S), the adjacent Borden Brook Reservoir (1281000-04S) and Sedimentation Basin (1281000-05S) located at the in-take to the water filtration plant, the West Parrish Filters. SWSC also maintains Ludlow Reservoir 1281000-01S as an Emergency Source. As a reserve for severe drought conditions, the SWSC also has water rights to 86 feet of water elevation from the Littleville Reservoir which is designated as an Emergency Source of water 1281000-03S. This report does not address the land uses in the Emergency Source watersheds.

The Cobble Mountain/Borden Brook watershed is located in the foothills of the Berkshires on the eastern side of the Berkshire Massif. The topography of the watershed consists primarily of steeply sloping brook valleys and rolling hills. The overburden material within the watershed is predominantly a thin cover of glacial till, often referred to as hard pan, with significant areas of exposed bedrock. Some of the brook valleys have limited deposits of glacial, stratified drift (sand and gravel) or recent alluvium which are locally mined. The bedrock in the watershed is mapped as several formations consisting of igneous and metamorphic rocks. The structural geology of the region is highly complex with four stages of folding and several faults resulting in numerous unconformities between rock types in the area.

The SWSC owns approximately 47% of the Cobble Mountain/Borden Brook system watershed; an additional 25% of the remaining watershed is forest or agriculture land (Chapter 61). Land use within the Cobble Mountain/Borden Brook watershed is primarily forested upland (nearly 80%) with the remaining watershed consisting of residential and agricultural activities (both commercial and non-commercial) such as crop land, animal husbandry and forestry; a small percentage of land is utilized as commercial and transportation related land use. The SWSC owns about 97% of Sedimentation Basin watershed; about 80% of the watershed is forest and the remaining land use is associated with water supply related activities. Please refer to the attached map to view the boundaries of the protective zones.

Water from the reservoirs is treated through a rapid sand or slow sand filtration

system, then chlorinated for disinfection and pH adjusted with soda ash for corrosion control. For current information on water quality monitoring results and treatment processes, please contact Katherine Pederson at 413-787-6256 for a copy of the most recent Consumer Confidence Report.

Section 2: Land Uses in the Protection Areas

There are few activities that pose significant anthropogenic threats to the reservoirs. However, due to the nature of surface water supplies the source is considered highly vulnerable to natural and anthropogenic potential contamination. Land uses and activities that are considered potential sources of contamination are listed in Table 2.

Key Land Uses and Protection Issues include:

1. Activities in Zone A
2. Residential land use
3. Transportation corridors and Rights-of-way
4. Agriculture and Golf course
5. Hazardous material handling
6. Protection planning

The overall ranking of susceptibility to contamination for the system is moderate, based on the presence of at least one moderate threat land use within the water supply protection areas, as seen in Table 2.

1. Activities in Zone A - The Zone A for a reservoir includes all areas within 400 feet of the reservoir shoreline and within 200 feet of either side of all streams and feeder ponds that flow into the reservoir. The Zone A is the area closest to the reservoir and its tributaries, therefore land uses within the Zone A are of particular concern. Activities that could potentially threaten water quality if improperly managed are restricted by 310 CMR 22.20B. Activities that store, use, or dispose of hazardous materials can be potential sources of contamination if improperly managed. Wild animals, farm animals and domestic pets can be carriers of waterborne diseases such as Giardia, Cryptosporidium, Salmonella, etc.

The SWSC owns or controls 95% of the Zone A land around the reservoirs and 47% of the total watershed lands. The following activities occur in the Zone A of the system's reservoirs:

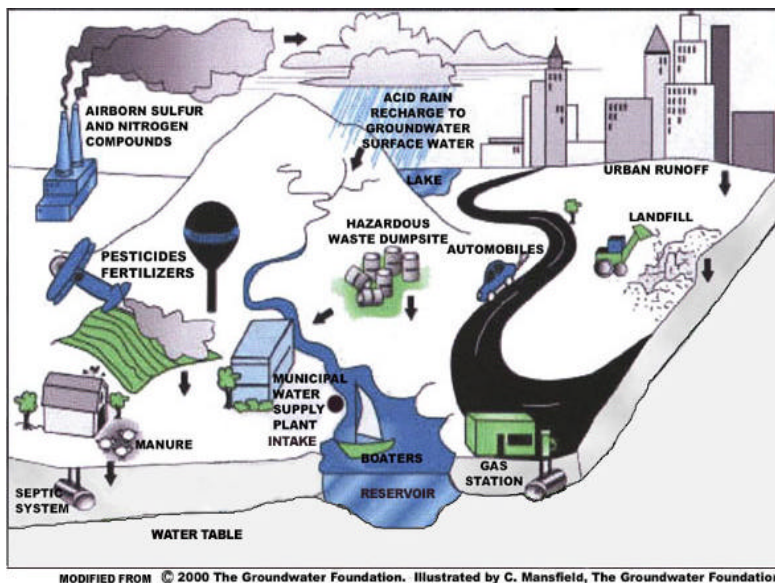
Cobble Mountain Reservoir (02S) - Activities include: state and interstate highways, local roads, agriculture, residential homes (all of which are on private septic systems), utility rights-of-way, a hydroelectric generation station, two gravel pit operations and a few commercial facilities. Most of these activities, with the exception of the hydroelectric generation station and the SWSC gravel pit, occur within the Zone A of tributary streams remote from the reservoir. The transformers at the hydroelectric generation facility have been relocated outside of the Zone A and a

Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.



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Figure 1: Sample watershed with examples of potential sources of contamination

decreased hazard mineral oil is used in oil-bearing machinery. In addition, stormwater runoff at the facility has been addressed by reconstruction of the access road and the installation of an oil-water separator and deep sump catch basins. A tarmac drain still exists on the access road, posing a potential threat in the event of an accident. However, the facility upgrades have significantly improved source protection at the facility. The facility is a very small quantity hazardous waste generator and must maintain best management practices and exceptional housekeeping to protect the source.

The SWSC owns three gravel pits, but uses them infrequently. Two pits are located within the Zone A. The threat associated with gravel operations include: petroleum products from equipment used or stored on site, erosion and runoff from the facility, access by off-road vehicles and illegal dumping of potentially harmful materials.

Borden Brook Reservoir (04S) - Activities include local roads, agriculture, residential homes (utilizing private septic systems), and at least one small commercial facility. The resident manager's home is located within the Zone A of Borden Brook Reservoir. That facility has a single family residence and a maintenance garage with four above ground petroleum storage tanks. The two diesel tanks for equipment refueling located at the maintenance garage have secondary containment and a roof over the tanks; the other two fuel oil tanks located in the basement of the residence do not have containment and the fuel lines are not sleeved, however, the floor is cement, there are no cracks and there are no floor drains. There is only minor maintenance work conducted at the garage with waste oil stored on a containment pallet. The small amounts of fuel (gasoline) kept on-site is stored in a metal "flammables" cabinet. The Borden Brook garage is not a registered hazardous waste generator.

Sedimentation Basin (05S) - The Zone A extends 400 feet downstream of the intake structure on Sedimentation Basin. Therefore, the land use table on the

SWAP map indicates activities other than forest and water within the Zone A of Sedimentation Basin. However, only water supply activities are conducted in the watershed and all of the treatment facilities are located downgradient of the pond, outside of the watershed.

Zone A Recommendations:

- ✓ To the extent possible, remove all prohibited activities from the Zone A to comply with DEP's Zone A requirements.
- ✓ To the extent feasible, remove all petroleum products from the Zone A. For those facilities that are required, provide containment for fuel oil and sleeve delivery lines. Monitor delivery of products and removal of waste products.
- ✓ Review the use of hazardous materials and amount of waste generated to determine if registration is warranted.
- ✓ Continue the current use of BMPs for the storage, use, and disposal of hazardous materials such as maintenance chemicals.
- ✓ Storage of pesticides, fertilizers or road deicing materials within the Zone A should be covered and contained.



What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

Source Protection Decreases Risk

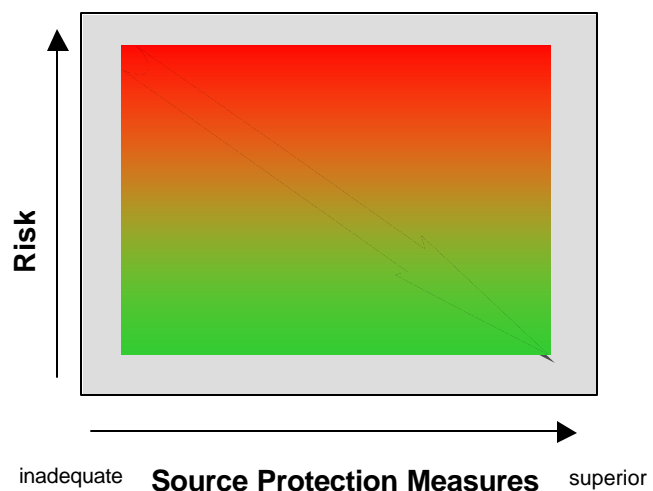


Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

Table 2: Land Use in the Watersheds

For more information, refer to Appendix B: Regulated Facilities within the Water Supply Protection Areas

Activities	Quantity	Threat*	Source ID	Potential Source of Contamination
Agricultural				
Livestock Operations (commercial and non-commercial)	12	M	02S, 04S	Manure (microbial contaminants, nutrients): improper handling, erosion.
Forestry Operations	Numerous	M	02S, 04S	Leaks and spills, improper handling of petroleum products in equipment. Erosion.
Nurseries	1	M	02S	Fertilizers, pesticides, and other chemicals: leaks, spills, improper handling, or over-application.
Agriculture—Pesticide/Fertilizer Storage or Use	Numerous	M	02S, 04S	Pesticides/fertilizers: leaks, spills, improper handling, or over-application. Petroleum products management for equipment.
Commercial				
Cemeteries	3	L	02S, 04S	Pesticide usage, historic embalming fluids. Spills from lawn equipment, management of petroleum products.
Confirmed Oil or Hazardous Material Release Sites	1	--	02S	Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character. Individual sites are identified in Appendix B.
Road and Maintenance Garage/Depots	3	M	02S	Deicing materials, automotive fluids, fuel storage, and other chemicals: spills, leaks, or improper handling or storage.
Schools	1	M	02S	Fuel oil, laboratory, art, photographic, machine shop, and other chemicals: spills, leaks, or improper handling or storage.
Very Small/Small Quantity Hazardous Waste Generators	Few	M	02S	Hazardous materials and waste: spills, leaks, or improper handling or storage.
Quarry/Mining	4	M	02S, 04S	Petroleum products and waste: spills, leaks, or improper handling or storage. Illegal dumping and erosion.
Hazardous Materials Storage/Use	Few	M	02S	Hazardous materials and waste: spills, leaks, or improper handling or storage.

Activities	Quantity	Threat*	Source ID	Potential Source of Contamination
Miscellaneous				
Stormwater Drains/ Retention Basins	Numerous	L	02S, 04S	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns.
Residential	Numerous	M	02S, 04S	Fuel oil: spills, leaks, or improper handling. Household hazardous materials, fertilizers, pesticides, etc.
Transportation Corridors	Numerous	M	02S, 04S	Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling.
Underground Storage Tanks	12	M	02S	Stored materials: spills, leaks, or improper handling.
Aboveground Storage Tanks	Numerous	M	02S, 04S	Stored materials: spills, leaks, or improper handling.
Utility Rights-of-Way	2	L/M	02S, 04S	SWSC has requested that utilities do not use pesticides.

Table 2 Notes:

1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
2. For more information on regulated facilities, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix C: Tier Classified Oil and/or Hazardous Material Sites.

* **THREAT RANKING** - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.

- ✓ To the extent possible, inform landowners within the Zone A regarding the use of BMPs.
- ✓ Prohibit all new non-water supply activities from the Zone A.
- ✓ Continue increased patrols and enforce the no trespassing requirement.
- ✓ Continue the practice of prioritizing land to be acquired. Acquiring land and/or acquiring conservation easements is critical to source protection.
- ✓ Closely monitor activities at the hydroelectric generation station to ensure the use of BMPs and good housekeeping practices.
- ✓ Review the Spill Prevention Control and Countermeasure Plan (SPCC) for the hydroelectric generation station with the utility to be sure it includes specific response plans in the event of an accident either inside or on the access road to the facility. Ensure the plan is readily available and staff are familiar with the plan.
- ✓ Carefully manage all activities at the gravel pit operations within the Zone A, specifically erosion. Implement BMPs for the storage, use, and disposal of hazardous materials related to equipment. Control access to prohibit off road vehicles and dumping.
- ✓ Where it is appropriate, consider developing a closure plan for unused portions of the gravel pits and for long term reclamation to minimize erosion and prevent trespassing.

2. Residential Land Uses – There are numerous residences located within the Cobble Mountain and Borden Brook Reservoir watersheds. None of the areas have public sewers to treat wastewater, therefore on-site septic systems are used. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems leach to the ground. If septic systems fail or are not properly maintained they can be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (UST and AST) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground and streams. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

- ✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet “Residents Protect Drinking Water” available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.
- ✓ Continue current efforts of negotiating fee simple purchase, Right of First refusal agreement, conservation restrictions and Memorandum of Understanding for land not currently owned or controlled by the SWSC.
- ✓ Refer to <http://www.state.ma.us/dep/brp/dws/dwspubs.htm> and <http://www.state.ma.us/dep/consumer/animal.htm#dwqual> for additional resources.

Top 5 Reasons to Develop a Local Surface Water Protection Plan

- ❶ Reduces Risk to Human Health
- ❷ Cost Effective! Reduces or Eliminates Costs Associated With:
 - ♦ Increased monitoring and treatment
 - ♦ Water supply clean up and remediation
 - ♦ Replacing a water supply
 - ♦ Purchasing water
- ❸ Supports municipal bylaws, making them less likely to be challenged
- ❹ Ensures clean drinking water supplies for future generations
- ❺ Enhances real estate values – clean drinking water is a local amenity. A community known for its great drinking water in a place people want to live and businesses want to locate.

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws including:

- 1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
- 2. MA DEP SWAP Strategy
- 3. Land Use Pollution Potential Matrix
- 4. Draft Land/Associated Contaminants Matrix

3. Transportation Corridors and Rights-of-way - The Massachusetts Turnpike runs through the northern edge of the Cobble Mountain watershed. There are also numerous local roads throughout both the Cobble Mountain and the Borden Brook watersheds, including many dirt roads. Although most roadways in the watersheds are relatively low-use, even typical roadway maintenance and low use pose a potentially significant source of contamination from accidents and washouts along both the paved and dirt roads, especially in the Zone A. Larger, heavily traveled roads pose a greater threat. De-icing materials, petroleum chemicals and other debris on roads are picked up by stormwater, washed and discharge into the feeder streams and reservoirs. Uncontrolled erosion contributes sediment, various contaminants and pathogens into the reservoirs. Clandestine dumping is identified as a significant threat to water supplies because roadways can be sites for illegal dumping of hazardous or other potentially harmful wastes. The SWSC has closed off access to one of the roadways near the reservoir, reducing illegal dumping that had occurred at that location.

There are numerous unpaved roadways as well as legal (authorized) and illegal (unauthorized) trails throughout the watershed. Erosion poses a significant threat to water quality in areas that are proximal to feeder streams and the reservoirs,

potentially resulting in additional water treatment costs if they continue unchecked. Uncontrolled erosion contributes sediment, various contaminants and pathogens into the contributing waters and reservoirs. SWSC does not allow public access to their watershed land except by License Agreement, or under the terms of the Massachusetts Department of Environmental Management (DEM) Conservation Restriction purchased on 1,450 acres. Unmanaged access may result in vandalism and/or illegal dumping which might cause water quality impairment.

The SWSC has an approved Surface Water Protection Plan and a Watershed Management Program. The SWSC's watershed management strategy included hiring a forester who also is the resident site manager and conducts watershed inspections. The plan also includes continued forest management, prioritizing road and trail maintenance, and watershed access control. The team is preparing an inventory of the existing conditions within the watershed and it has determined numerous areas of uncontrolled access and erosion problems. The team will develop and implement BMPs including the replacement of culverts or the use of temporary bridges. The SWSC maintains a "no access without written permission" policy for all but the 1,450 acres of land most recently purchased through the Aquifer Land Acquisition (ALA) program. Access to the land purchased through ALA funding is governed by the DEM Conservation Restriction that details allowable activities and public access to that land; there is no formal access management plan.

Electric and natural gas rights-of-way also run through the watershed. Normal maintenance of any right-of-way can introduce contaminants to a water supply through herbicide application for vegetation control. The SWSC has requested that utilities use only mechanical methods to control vegetation on rights-of-way within the Little River watershed.

Transportation Corridor Recommendations:

- ✓ Continue regular inspection of watersheds for signs of access, illegal dumping and spills.
- ✓ Work with local emergency response teams to ensure that any spills within the protection areas can be effectively contained.
- ✓ Continue current efforts toward working with host communities and the MAHD to have catch basins inspected, maintained, and cleaned on a regular schedule.
- ✓ If storm drainage maps are available, review the maps with emergency response teams. If maps are not yet available, work with town and State officials to investigate mapping options. This recommendation applies primarily to Route 23 and the Turnpike.
- ✓ Promote BMPs for stormwater management and pollution controls.
- ✓ Continue increased patrols of watershed land and enforce no trespassing.
- ✓ Notify community officials within your watershed of potential USDA funding for mitigation and prevention of runoff pollution through the Environmental Quality Incentives Program (EQIP). The USDA web site is www.rurdev.usda.gov or call the Rural Development Manager at the local office in Hadley at 413-585-1000. Review the fact sheet available online and call the NRCS office in Amherst 413-253-4350 for assistance <http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf>.
- ✓ Continue investigating disposition of all roads, ways and "trails" and pursue as appropriate, closing or controlling access.
- ✓ Evaluate existing conditions throughout the watershed with respect to current illegal use of watershed land. Determine where access is being gained and the destination points to facilitate development of a management

For More Information

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, town boards, and the local media.

strategy to eliminate or control access. As appropriate, coordinate management strategies with the communities within the watersheds.

- ✓ Continue to evaluate past forest management practice and update a water supply forest management plan as appropriate.

Rights-of-way Recommendations:

- ✓ Continue current practice of reviewing the right-of-way Yearly Operating Plan (YOP) for utilities to ensure they continue use of only manual control of vegetation and that the utility has accurate information regarding the locations of the protection zones. Review the maps the utilities use.
- ✓ Continue current efforts toward working with local emergency response planners. Be sure that local emergency response teams are aware of the protection areas and coordinate Emergency Response Drills.

4. Agricultural Activities and Golf Course – The watersheds include a small

percentage, approximately 3%, of land for agricultural activities and a golf course. Pesticides, fertilizers and manure have the potential to contaminate a drinking water source if improperly stored, applied, or disposed. If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store. Frequently, farms and golf courses have maintenance garages for equipment and storage tanks.

Agricultural Activities and Golf Course Recommendations:

- ✓ Work with commercial farmers in your protection areas to make them aware of your water supply and to encourage the use of a USDA Natural Resources Conservation Service (NRCS) farm plan to protect water supplies. Review the fact sheet available online and call the local office of the NRCS in Hadley at 413-585-1000 for assistance or online at <http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf>.
- ✓ Encourage farmers and golf course managers to incorporate an Integrated Pest Management (IPM) approach into their pest management program. IPM is an ecologically-based approach to pest control that links together several related components, including monitoring and scouting, biological controls, mechanical and/or other cultural practices, and pesticide applications. By combining a number of these different methods and practices, satisfactory pest control can be achieved with less impact on the environment.
- ✓ Promote the use of BMPs for fuel oil storage, hazardous material handling, storage, disposal, and emergency response planning.
- ✓ Continue your current work with farmers, and include nurseries and the golf course to ensure that pesticides and fertilizers are being stored within a structure designed to prevent runoff.
- ✓ The USDA has various funding sources for government agencies, non-government organizations and agricultural facilities through programs such as those listed on the USDA web site <http://search.sc.egov.usda.gov/>. One program in particular, the Environmental Quality Incentives Program (EQIP) may be utilized in a variety of projects from DPW stormwater management to farm nutrient management designed to protect surface and groundwater. Review the fact sheet available online and call the local office of the NRCS for assistance <http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf>. This may be appropriate for host communities.
- ✓ Work with hobby farmers by supplying them with information about protecting their own wells and the public water supply by encouraging the use of BMPs. Refer to <http://www.state.ma.us/dep/brp/dws/dwspubs.htm> and <http://www.state.ma.us/dep/consumer/animal.htm#dwqual> for additional resources.

5. Protection Planning – The SWSC has an approved Water Supply Protection Plan, however, plans periodically require updating to reflect completed tasks and new conditions. An updated plan has recently been submitted to the Department for review. An effective overall protection plan will not only include detailed land use, but also includes: coordinated community efforts which identify protection strategies, establishing a timeframe for implementation, and provides a forum for public education and outreach. The watershed is primarily woodland with a large portion of the land managed through forestry operations. Good forest management of both SWSC land and private land can beneficially impact water quality and health of the watershed forests.

Protection Planning Recommendations:

- ✓ Continue active watershed protection planning and forest management for water supply protection in a comprehensive watershed plan.
- ✓ Encourage and support efforts by private land owners in active forest management for water supply protection.
- ✓ Continue working with communities and their local officials and boards in the watershed in active watershed protection planning and education efforts.

Land uses and activities within the watershed that are potential sources of contamination are included in Table 2. Identifying potential sources of contamination is an important initial step toward protecting your drinking water sources. Further local investigation will provide more in-depth information and may identify new land uses and activities that are potential sources of contamination. Once potential sources of contamination are identified, specific recommendations like those below should be used to better protect your water supply.

Section 3: Source Water Protection Conclusions and Recommendations

Current Land Uses and Source Protection:

As with many water supply protection areas, the system's watershed contains potential sources of contamination. However, source protection measures reduce the risk of actual contamination, as illustrated in Figure 2. The water supplier is commended for taking an active role in promoting source protection measures in the Water Supply Protection Areas through:

- re-establishing a resident manager at the reservoir,
- investigating the legal disposition of roads and ways in the watershed and controlling access to the watershed,
- active involvement in inspecting and inventorying land uses in the watershed,
- proactive involvement with host communities by assisting with grant proposals for watershed protection projects,
- proactive land acquisition and acquisition of conservation restrictions to control activities in the Zone As, and
- fostering cooperative relationships with communities and land owners within the watersheds.

Source Protection Recommendations:

To better protect the sources for the future:

- ✓ Continue inspection of the Zone A protection areas regularly, and when feasible, remove or manage any non-water supply activities, specifically the maintenance activities and fuel oil storage in Zone A.
- ✓ Educate residents on ways they can help you to protect drinking water sources.
- ✓ Continue cooperation and communication with emergency response teams to ensure that they are aware of the boundaries of the watershed for notification of spills or accidents.
- ✓ Continue working with landowners in your protection areas to make them aware of your water supply and to encourage the use of best management practices for residential and recreational uses.
- ✓ Update the Watershed Protection Plan for water supply protection to include a management plan for the areas open to public access.
- ✓ Evaluate stormwater drainage specifically in the Zone A along roads throughout the watershed. Make every effort to ensure stormwater discharges and run-off is detained prior to release to protection areas. Consider various strategies to detain/slow the flow and retain sediments to keep the runoff out of tributaries and the reservoirs.
- ✓ If local controls do not regulate floor drains, encourage communities to adopt floor drain controls and hazardous waste management strategies.
- ✓ Request that local highway departments inspect, maintain, and clean catch basins on a regular schedule.
- ✓ Continue a forest management program to establish a healthy and ideal watershed forest, which will buffer anthropogenic and natural environmental impacts on water quality and quantity.
- ✓ In locations where residential and commercial land uses are within the Zone A, consider conducting stream flow and water quality monitoring to determine potential effects of these activities on water quality.

Conclusions:

These recommendations are only part of your ongoing local drinking water source protection. Additional source protection recommendations are listed in Table 3, the Key Issues, above and in Appendix A.

➤ **Partner with Local Businesses:**

Since many small businesses and industries use hazardous materials and produce hazardous waste products, it is essential to educate the business community about drinking water protection. Encouraging partnerships among businesses, water suppliers, and communities will enhance successful public drinking water protection practices.

➤ **Educate Residents:**

If managed improperly, household hazardous waste, septic systems, lawn care, and pet waste can all contribute to water supply contamination. Hazardous materials include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Animal waste is also a source of microbial contamination.

➤ **Provide Outreach to the Community:**

Public education and community outreach ensure the long-term protection of drinking water supplies. Awareness often generates community cooperation and support. Residents and business owners are more likely to change their behavior if they know where the source protection areas are located, what types of land uses and activities pose threats, and how their efforts can enhance protection.

➤ **Plan for the Future:**

One of the most effective means of protecting water supplies is local planning, including adoption of local controls to protect land use and regulations related to watershed protection. These controls may include health regulations, discharge prohibitions, general ordinances, and zoning bylaws/ordinances that prohibit or control potential sources of contamination within the protection areas.

➤ **Other Funding Sources:**

Other grants and loans are available through the Drinking Water State Revolving Loan Fund, the Clean Water State Revolving Fund, and other sources. For more information on grants and loans, visit the Bureau of Resource Protection's Municipal Services web site at: <http://mass.gov/dep/brp/mf/mfpubs.htm>. The USDA also has various funding sources for government agencies, non-government organizations and agricultural facilities through programs such as those listed on the USDA web site <http://search.sc.egov.usda.gov/nrcs.asp?qu=equip&ct=NRCS>. One program in particular, the Environmental Quality Incentives Program (EQIP) may be utilized in a variety of projects from DPW stormwater management to farm nutrient management designed to protect surface and groundwater. Review the fact sheet available online and call the local office (Hadley 413-585-1000) of the NRCS for assistance or online at <http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf>. The Department's Grant Programs provide funds to assist public water suppliers and their partners in addressing various local projects. Protection recommendations discussed in this document may be eligible for funding under these grant programs. If funds are available, each spring DEP posts a new Request for Response (RFR) for the grant programs. Visit the DEP online at <http://www.state.ma.us/dep/brp/mf/othergrt.htm> and <http://www.state.ma.us/dep/brp/dws/grants.htm> for information about available funds.

DEP staff, informational documents, and resources are available to help you build on this SWAP report as you continue to improve drinking water protection.

The assessment and protection recommendations in this SWAP report are provided as a tool to encourage community discussion, support ongoing source protection efforts, and help establish local drinking water protection priorities. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures. The water supplier should supplement this SWAP report with local information on potential sources of contamination and land uses. Local information should be maintained and updated periodically to reflect land use changes in the protection areas. Use this information to establish priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

Section 4: Appendices

- A. Protection Recommendations
- B. Regulated Facilities within the Water Supply Protection Areas
- C. Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas

Table 3: Current Protection and Recommendations

Protection Measures	Status	Recommendations
Zone A		
Does the Public Water Supplier (PWS) own or control the entire Zone A?	YES (95%)	Follow Best Management Practices (BMP's) that focus on good housekeeping, spill prevention, and operational practices to reduce the use and release of hazardous materials. Continue efforts to acquire critical land for protection.
Is the Zone A posted with "Public Drinking Water Supply" or "No Trespassing" signs?	YES	Additional economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Is the Zone A regularly inspected?	YES	Continue regular inspections of drinking water protection areas.
Are water supply-related activities the only activities within the Zone A?	YES	Continue monitoring non-water supply activities in Zone As.
Municipal Controls (Zoning Bylaws, Health Regulations, Ordinances and General Bylaws)		
Do the watershed municipalities have Surface Water Protection Controls that meet 310 CMR 22.20C?	NO	Granville is working on an Open Space Plan to address land use in the town. The Blandford Watershed Protection bylaw for the Long Pond watershed complies with DEP's regulation. Refer to www.state.ma.us/dep/brp/dws/ for model bylaws, health regulations, and current regulations.
Do neighboring communities protect the water supply protection areas extending into their communities?	NO	Work with neighboring municipalities to include the watershed in their protection controls.
Planning		
Does the PWS have a local surface water supply protection plan?	YES	Update the Plan as appropriate to address newly identified threats and to adjust protection priorities as tasks are completed.
Does the PWS have a formal "Emergency Response Plan" to deal with spills or other emergencies?	YES	Update the Plan as appropriate by developing a joint emergency response plan with the Fire Department, Board of Health, DPW, and local and state emergency officials. Coordinate emergency response drills with local teams. Complete vulnerability assessment as appropriate for the system.
Does the municipality have a watershed protection committee?	NO	Consider establishing a committee that includes representatives from citizens' groups, communities that your watershed is within, and the business community.
Do the Boards of Health conduct inspections of commercial and industrial activities?	NO	For more guidance see "Hazardous Materials Management: A Community's Guide" at www.state.ma.us/dep/brp/dws/files/hazmat.doc . However, there are very few hazardous materials users in the watershed.
Does the PWS provide watershed protection education?	YES	Aim additional efforts at commercial, industrial and municipal uses within the watershed.

APPENDIX B: REGULATED FACILITIES WITHIN THE WATER SUPPLY PROTECTION AREAS

DEP Permitted Facilities

DEP Facility Number	Facility Name	Street Address	Town	Permitted Activity	Activity Class	Facility Description
38152	Ma Turnpike Auth	Old Chester Rd Blandford Maint	Blandford	Hazardous Waste Generator	SQG-MA	Highway Maintenance Garage
				Hazardous Waste Generator	VSQG	
178320	Mobil Oil Corp SS Ken	Mm 29 - Ma Tnpk East Bound	Blandford	Hazardous Waste Generator	VSQG	Garage
38152	MTA Blandford Maintenance Depot	Mass Tnpk East Mm 26, Old Chester Rd	Blandford	Fuel Dispenser	Fuel Dispenser	Gasoline Station
366334	Circle K Store 2704492	Mass Turnpike East Mm 29.1	Blandford	Fuel Dispenser	Fuel Dispenser	Gasoline Station
MAV000016827	Town Of Blandford, Hwy Dept.	Otis Road	Blandford	Hazardous Waste Generator	VSQG	Garage
	Chester Granite Company	Algerie Road	Blandford	Hazardous Waste Generator	VSQG	Earth Removal/ Mining
MAV000018678	Northeast Generation Services Co.	Cobble Mountain Station	Granville	Hazardous Waste Generator	VSQG	Power Generation Station

Underground Storage Tanks

Facility Name	Address	Town	Description	Tank Type	Tank Leak Detection	Capacity (gal)	Contents
Blandford Maintenance Depot	Old Chester Rd	Blandford	Mass Turnpike Authority			6,000	Waste Water
				2 Walls	Interstitial Monitoring	4,000	Heating Oil
				2 Walls	Interstitial Monitoring	10,000	Gasoline
				2 Walls	Interstitial Monitoring	10,000	Diesel
Tosco #2704492	Mm 29 Mass' Pike Eastbound	Blandford	Tosco Refining Lp	2 Walls	Interstitial Monitoring	6,000	Diesel
				2 Walls	Interstitial Monitoring	10,000	Gasoline
				2 Walls	Interstitial Monitoring	10,000	Gasoline
				2 Walls	Interstitial Monitoring	10,000	Gasoline
						550	Waste oil
Town Of Blandford Hwy Dept	114 Otis Rd	Blandford	Town Of Blandford Hwy Dept	2 Walls	Interstitial Monitoring	1,000	Diesel
				2 Walls	Interstitial Monitoring	1,000	Gasoline

For more information on underground storage tanks, visit the Massachusetts Department of Fire Services web site:

<http://www.state.ma.us/dfs/ust/ustHome.htm>

Additional information provided by individual owners

Note: This appendix includes only those facilities within the water supply protection area(s) that meet state reporting requirements and report to the appropriate agencies. Additional facilities may be located within the water supply protection area(s) that should be considered in local drinking water source protection planning.

APPENDIX C – Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas

DEP's datalayer depicting oil and/or hazardous material (OHM) sites is a statewide point data set that contains the approximate location of known sources of contamination that have been both reported and classified under Chapter 21E of the Massachusetts General Laws. Location types presented in the layer include the approximate center of the site, the center of the building on the property where the release occurred, the source of contamination, or the location of an on-site monitoring well. Although this assessment identifies OHM sites near the source of your drinking water, the risks to the source posed by each site may be different. The kind of contaminant and the local geology may have an effect on whether the site poses an actual or potential threat to the source.

The DEP's Chapter 21E program relies on licensed site professionals (LSPs) to oversee cleanups at most sites, while the DEP's Bureau of Waste Site Cleanup (BWSC) program retains oversight at the most serious sites. This privatized program obliges potentially responsible parties and LSPs to comply with DEP regulations (the Massachusetts Contingency Plan – MCP), which require that sites within drinking water source protection areas be cleaned up to drinking water standards.

For more information about the state's OHM site cleanup process to which these sites are subject and how this complements the drinking water protection program, please visit the BWSC web page at <http://www.state.ma.us/dep/bwsc>. You may obtain site -specific information two ways: by using the BWSC Searchable Sites database at <http://www.state.ma.us/dep/bwsc/sitelist.htm>, or you may visit the DEP regional office and review the site file. These files contain more detailed information, including cleanup status, site history, contamination levels, maps, correspondence and investigation reports, however you must call the regional office in order to schedule an appointment to view the file.

The table below contains the list of Tier Classified oil and/or Hazardous Material Release Sites that are located within your drinking water source protection area.

Table 1: Bureau of Waste Site Cleanup Tier Classified Oil and/or Hazardous Material Release Sites (Chapter 21E Sites) - Listed by Release Tracking Number (RTN)

RTN	Release Site Address	Town	Contaminant Type
1-0000877	MTA Maintenance Depot	Blandford	Oil

For more location information, please see the attached map. The map lists the release sites by RTN.